



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

DAVIS

Appln. No. 10/679,692

Filed: October 7, 2003

FOR: MODIFIED CARBOHYDRATE PROCESSING ENZYME

Confirmation No.: 7864

Atty. Ref.: 117-480

T. C. / Art Unit: 1652

Examiner: Not Known

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INFORMATION DISCLOSURE STATEMENT

March 19, 2004

U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached are Forms PTO-1449 listing the enclosed documents.

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As provided by 37 CFR §§ 1.97(g) and (h), no inference should be made that this information and the listed references are prior art merely because they have been submitted for consideration. Furthermore, no representation is being made that a search has been conducted or that this statement encompasses all possible material information.

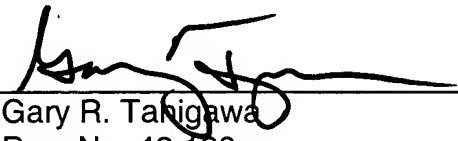
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Consideration of the foregoing and enclosures, as well as the return of a copy of the Forms PTO-1449 with the Examiner's initials per MPEP § 609, are earnestly solicited. The Examiner is invited to contact the undersigned if any further information is needed.

Respectfully submitted,

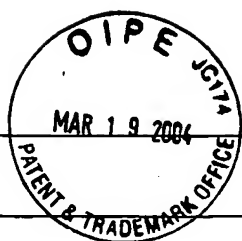
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(Use several sheets if necessary)

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
AR						
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FOREIGN PATENT DOCUMENTS

	DOCUMENT	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO
CR	WO 02/080980	10/2002	WIPO			

OTHER DOCUMENTS (including Author, Title, Date, Pertinent pages, etc.)

DR	Aguilar et al. "Crystal structure of the β -glycosidase from the hyperthermophilic archeon <i>sulfolobus solfataricus</i> : Resilience as a key factor in thermostability" J. Mol. Biol. 271:789-802 (1997)
ER	Andrews et al. "Substrate specificity in glycoside hydrolase family J. Biol. Chem. 275:23027-23033 (2000)
FR	Babcock et al. "Facile preparation of unsymmetric carbodiimides via <i>in situ</i> Tin(II)-mediated heterocumulene metathesis" J. Am. Chem. Soc. 120:5585-5586 (1998)
GR	Banner et al. "Structure of chicken muscle triose phosphate isomerase determined crystallographically at 2.5Å resolution" Nature 255:609-614 (1975)
HR	Barton et al. "Structure, mechanism and engineering of a nucleotidyltransferase as a first step toward glycorandomization" Nature Struct. Biol. 8:545-551 (2001)
IR	Breidt et al. "Nucleotide and deduced amino acid sequences of the <i>staphylococcus aureus</i> phospho- β galactosidase gene" Appl. Environ. Microbiol. 53:969-973 (1987)
JR	Cairns et al. "Primary structure of the dalcocinin-8'-O-beta-glucoside beta-glucosidase from the thai Rosewood Dalbergia cochinchinensis pierre" TREMBL:Q9SPK3
KR	Corbett et al. "Tailoring the substrate specificity of the β -glycosidase from the thermophilic archaeon <i>sulfolobus solfataricus</i> " FEBS Lett. 509:355-360 (2001)
LR	Crout et al. "Glycosidases and glycosyl transferases in glycoside and oligosaccharide synthesis" Curr. Opin. Chem. Biol. 2:98-111 (1998)
MR	Cubellis et al. "Isolation and sequencing of a new β -galactosidase-encoding archaeobacterial gene" Gene 94:89-94 (1990)
NR	Davis "Recent developments in oligosaccharide synthesis" J. Chem. Soc., Perkin Trans. 1:2137-2160 (2000)
OR	Fort et al. "Highly efficient synthesis of β (1 \rightarrow 4)-oligo and polysaccharides using a mutant cellulase" J. Am. Chem. Soc. 122:5429-5437 (2000)
PR	Henrissat "A classification of glycosyl hydrolases based on amino acid sequence similarities" Biochem. J. 280:309-316 (1991)
QR	Inoue et al. "Molecular cloning and bacterial expression of cDNA encoding furostanol glycoside 26-O- β -glucosidase <i>Costus speciosus</i> " FEBS Lett. 389:273-277 (1996)
RR	Kaper et al. "Comparative structural analysis and substrate specificity engineering of the hyperthermostable β -glucosidase CelB from <i>Pyrococcus furiosus</i> " Biochem. 39:4963-4970 (2000)
SR	Koeller et al. "Emerging themes in medicinal glycoscience" Nature Biotechnol. 18:835-841 (2000)
TR	Kren et al. "Glycosylation employing bio-systems: From enzymes to whole cell" Chem. Soc. Rev. 26:463-473 (1997)
UR	Krstenansky et al. "Biocatalytic combinatorial synthesis" Bioorganic & Medicinal Chemistry 7:2157-2162 (1999)
VR	Mackenzie et al. "Glycosynthases: Mutant glycosidases for oligosaccharide synthesis" J. Am. Chem. Soc. 120:5583-5584 (1998)
WR	Malet et al. "From β -glucanase to β -glucansynthase: Glycosyl transfer to α -glycosyl fluorides catalyzed by a mutant endoglucanase lacking its catalytic nucleophile" FEBS Lett. 440:208-212 (1998)
XR	Mantei et al. "Complete primary structure of human and rabbit lactase-phlorizin hydrolase: Implications for biosynthesis, membrane anchoring and evolution of the enzyme" EMBO J. 7:2705-2713 (1988)

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OTHER DOCUMENTS (including Author, Title, Date, Pertinent pages, etc.)						
AR	Mayer et al. "The E358S mutant of <i>Agrobacterium</i> sp. β -glucosidase is a greatly improved glycosynthase"	FEBS Lett. 466:40-44 (2000)				
BR	Moracci et al. "Identification of two glutamic acid residues essential for catalysis in the β -glycosidase from the thermoacidophilic archaeon <i>Sulfolobus solfataricus</i> "	Protein Engineering 9:1191-1195 (1996)				
CR	Morcci et al. "Expression and extensive characterization of a β -glycosidase from the extreme thermoacidophilic archaeon <i>Sulfolobus solfataricus</i> in <i>Escherichia coli</i> . Authenticity to the recombinant enzyme"	Enzyme and Microbial Technology 17:992-997 (1995)				
DR	Moracci et al. "Restoration of the activity of active-site mutants of the hyperthermophilic β -glycosidase from <i>Sulfolobus solfataricus</i> : Dependence of the mechanism on the action of external nucleophiles"	Biochem. 37:17262-17270 (1998)				
ER	Michels et al. "Combinatorial biocatalysis: A natural approach to drug discovery"	Trends Biotechnol. 16:210-215 (1998)				
FR	Nashiru et al. " β -mannosynthase: Synthesis of β -mannosides with a mutant β -mannosidase"	Angew. Chem. Int. Ed. 40:417-421 (2001)				
GR	Nucci et al. "Exo-glucosidase activity and substrate specificity of the β -glycosidase isolated from the extreme thermophile <i>Sulfolobus solfataricus</i> "	Biotechnol. Appl. Biochem. 17:239-250 (1993)				
HR	Palcic "Biocatalytic synthesis of oligosaccharides"	Curr. Opin. Biotechnol. 10:616-624 (1999)				
IR	Pisani et al. "Thermostable β -galactosidase from the archaebacterium <i>Sulfolobus solfataricus</i> "	Eur. J. Biochem. 187:321-328 (1990)				
JR	Prade et al. "Enzymatic synthesis of disaccharides using <i>Agrobacterium</i> sp. β -glucosidase"	Carbohydrate Res. 305:371-381 (1998)				
KR	Rantwijk et al. "Glycosidase-catalysed synthesis of alkyl glycosides"	J. Mol. Catal. B: Enzym. 6:511-532 (1999)				
LR	Rye et al. "Glycosidase mechanisms"	Curr. Opin. Chem. Biol. 4:573-580 (2000)				
MR	Scigelova et al. "Glycosidases – a great synthetic tool"	J. Mol. Catal. B: Enzym. 6:483-494 (1999)				
NR	Trincone et al. "A novel thermophilic glycosynthase that effects branching glycosylation"	Bioorganic & Medicinal Chem. Lett. 10:365-368 (2000)				
OR	Voorhorst et al. "Characterization of the <i>celB</i> gene coding for β -glucosidase from the hyperthermophilic archaeon <i>Pyrococcus furiosus</i> and its expression and site-directed mutation in <i>Escherichia coli</i> "	J. Bacteriol. 177:7105-7111 (1995)				
PR	Watt et al. "Enzyme-catalyzed formation of glycosidic linkages"	Curr. Opin. Struct. Biol. 7:652-660 (1997)				
QR	Wymer et al. "Enzyme-catalyzed synthesis of carbohydrates"	Curr. Opin. Chem. Biol. 4:110-119 (2000)				
RR	Xue et al. "The glucosinolate-degrading enzyme myrosinase in <i>Brassicaceae</i> is encoded by a gene family"	Plant Mol. Biol. 18:387-398 (1992)				
ST	Zhang et al. "Directed evolution of a fucosidase from a galactosidase by DNA shuffling and screening"	Proc. Natl. Acad. Sci. USA 94:4504-4509 (1997)				
TR						
UR						
VR						
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